

Bull. Natn. Sci. Mus., Tokyo, Ser. A, 10 (1), March 22, 1984

Two New Trematodes from Gallbladder of Tropical Marine Fishes, *Myripristis* and *Abudefduf*¹⁾

By

Masaaki MACHIDA

Department of Zoology, National Science Museum, Tokyo

Abstract

Two new trematodes are described and illustrated from the gallbladder of tropical marine fishes. *Deretrema ovale* (Zoogonidae), parasitic in *Myripristis violaceus* of Palau, is distinguished by the cirrus pouch lying longitudinally and the genital pore opening away from the left body margin. *Lepocreadium oyabitcha* (Lepocreadiidae), found in *Abudefduf vaigiensis* of Okinawa, is characterized by the location in host, oval in body shape, the testes without incisions, the cirrus pouch not reaching posterior to the acetabulum, ramiform vitellaria extending into the forebody, and the uterus with numerous eggs.

This paper deals with two new species of trematodes found in the gallbladder of marine fishes of Palau and Japan. The trematodes were washed in saline, fixed in acetic sublimate or alcohol-formalin-acetic acid (AFA) under coverslip pressure, stained with Heidenhain's hematoxylin and mounted in balsam. The specimens are deposited in the collection of the National Science Museum, Tokyo.

I wish to express my cordial thanks to Mr. T. NAGASAKI, Okinawa Expo Memorial Park Aquarium and Mr. O. HINGOSHI, Palau, for providing me facilities to collect the fish parasites. Thanks are also due to Dr. K. MATSUURA, National Science Museum, Tokyo, for identifying the host fishes.

Zoogonidae

Deretrema ovale n. sp.

(Figs. 1-2)

Habitat. Gallbladder of *Myripristis violaceus* BLEEKER (Holocentridae).

Locality. Palau, western Caroline Islands.

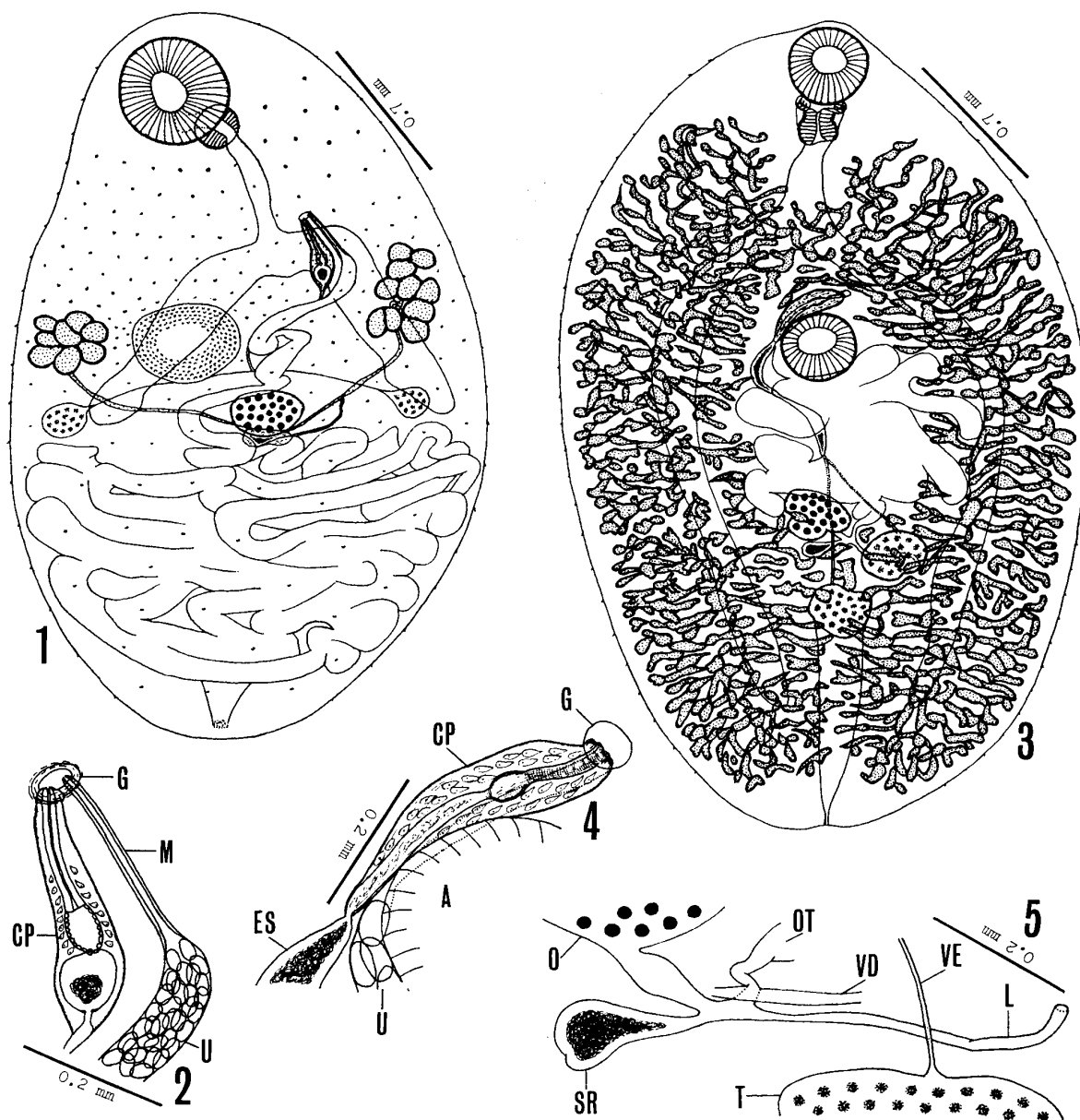
Date. July, 1980.

Specimen No. NSMT-PI 2430 (holotype) and 2412.

Description. Based on 3 specimens (1 of them partly crushed). Body plump, reddish in color in life. After flattening, body oval, 3.2-3.5 mm long and 1.5-1.9 mm

1) This study is supported in part by the Grant-in-aid for Scientific Research (Overseas) No. 56043001 from the Ministry of Education, Science and Culture, Japan.

wide at equator of body. Cuticle with minute squamous spines. Subcuticular longitudinal and diagonal muscle fibers running reticulately throughout the body. Oral sucker rounded, $0.47\text{--}0.49 \times 0.47\text{--}0.53$ mm, ventral, a little posterior to cephalic extremity. Prepharynx very short. Pharynx oval, $0.16\text{--}0.18 \times 0.20\text{--}0.23$ mm. Esoph-



Figs. 1-2. *Deretrema ovale* n. sp. — 1. Entire worm, ventral view. — 2. Terminal genitalia, ventral view.

Figs. 3-5. *Lepocreadium oyabitcha* n. sp. — 3. Entire worm, ventral view. — 4. Terminal genitalia, ventral view. — 5. Ovarian complex, ventral view. A, acetabulum; CP, cirrus pouch; ES, external seminal vesicle; G, genital pore; L, Laurer's canal; M, metraterm; O, ovary; OT, ootype; SR, seminal receptacle; T, testis; U, uterus; VE, vas efferens; VD, vitelline duct.

agus 0.40–0.51 mm long, bifurcating at junction between anterior and middle third of body. Caeca rather wide, terminating near equator of body. Acetabulum thin, slightly wider than long, $0.36\text{--}0.40 \times 0.47\text{--}0.51$ mm, with muscle poorly developed and squamous spines densely except for the indistinct orifice, at or just anterior to equator of body. Sucker ratio 1: 0.92–1.08.

Testes small, ovoid, $0.15\text{--}0.17 \times 0.14\text{--}0.21$ mm, situated one on each side of body near caecal termination. Vas efferens united with each other at acetabular region. Cirrus pouch claviform, $0.25\text{--}0.36 \times 0.07\text{--}0.10$ mm, lying longitudinally, sinistral to esophagus or caecal bifurcation, containing oval seminal vesicle $82\text{--}90 \times 56\text{--}78$ μm , subglobular pars prostatica $33\text{--}52 \times 46\text{--}52$ μm and slender cirrus 0.12–0.17 mm long. Genital pore anterosinistral to caecal bifurcation, away from left body margin.

Ovary ovoid, $0.22\text{--}0.29 \times 0.27\text{--}0.34$ mm, posterodorsal or slightly posterosinistral to acetabulum. Seminal receptacle elliptical, $0.10\text{--}0.12 \times 0.15\text{--}0.29$ mm, posterodorsal or just posterior to ovary. Laurer's canal opening dorsally sinistral to seminal receptacle. Vitelline follicles 0.07–0.14 mm in diameter, forming a grape-like bunch, 8 on right and 10 on left, just outside of each caecum between caecal bifurcation and testes, a few of them lie ventral to caecum. Uterus running transversely and filling hindbody, then ascending windingly to left of acetabulum. Metraterm thin-walled, 0.20–0.25 mm long, sinistral to cirrus pouch. Uterine eggs oval, $33\text{--}39 \times 21\text{--}24$ μm . Excretory vesicle obscured by uterus; pore slightly dorsal to caudal extremity.

Discussion. BEVERLY-BURTON and EARLY (1982) divided the genus *Deretrema* LINTON, 1910 into two groups on the basis of the caecal extent. The one group, alike the present species, has caeca terminating either anterior to or at the level of the testes, and the other has caeca extending posterior to the testes. The former group contains seven species: *D. fellis* (YAMAGUTI, 1934), *D. sebastodis* (YAMAGUTI, 1934), *D. cholaeum* McFARLANE, 1936, *D. pacificum* YAMAGUTI, 1942, *D. nahaense* YAMAGUTI, 1942, *D. pooli* ANNÉREAU, 1947 and *D. minutum* MANTER, 1954. In addition, the caecal extent is not described for *D. parapriacanthi* YAMAGUTI, 1959.

The present species is distinguished from them by a cirrus pouch lying longitudinally, and a genital pore opening anterosinistral to the caecal bifurcation, away from the left body margin. In the above-mentioned eight species including *D. parapriacanthi*, the cirrus pouch is situated transversely or obliquely, and the genital pore is located on the left body margin.

Lepocreadiidae

Lepocreadium oyabitcha n. sp.

(Figs. 3–5)

Habitat. Gallbladder of *Abudefduf vaigiensis* (QUOY et GAIMARD) (Pomacentridae).

Locality. Okinawa, southern Japan.

Date. May, 1983.

Specimen No. NSMT-PI 2757 (holotype) and 2737.

Description. Based on 6 specimens (2 of them postmortem atonied). Parasitic in a pair. Body plump, reddish in color in life. After flattening, body oval or nearly elliptical, 3.1–4.4 mm long and 2.1–3.0 mm wide at equator of body. Cuticle spinose. Subcuticular longitudinal and diagonal muscle fibers running reticulately throughout the body. Oral sucker subterminal, rounded, $0.29\text{--}0.44 \times 0.33\text{--}0.42$ mm. Prepharynx very short. Pharynx pot-shaped, $0.15\text{--}0.21 \times 0.17\text{--}0.27$ mm, with auricular appendage anteriorly. Esophagus 0.12–0.32 mm long, bifurcating just posterior to midlevel of forebody. Caeca arching, passing immediately outside of uterus, terminating on each side of median excretory vesicle about midway between posterior testis and caudal extremity. Acetabulum circular, $0.30\text{--}0.35 \times 0.32\text{--}0.38$ mm, a little anterior to equator of body. Sucker ratio 1:0.88–0.96.

Testes subglobular or transversely elongated, $0.20\text{--}0.37 \times 0.31\text{--}0.68$ mm, one obliquely behind the other, occasionally close together; the anterior slightly sinistral to midline, just posterior to midlevel of hindbody; the posterior near midline. Vas efferens arising from mid-anterior margin of testes. External seminal vesicle tubular, 61–77 μm wide, almost straight or diagonally, dorsal to uterus. Cirrus pouch claviform, $0.30\text{--}0.44 \times 0.08\text{--}0.12$ mm, extending along anterodextral margin of acetabulum or dorsal to anterior half of acetabulum, containing slender seminal vesicle $137\text{--}230 \times 30\text{--}41$ μm , subglobular pars prostatica $51\text{--}87 \times 40\text{--}46$ μm and eversible cirrus 51–77 μm long. Genital pore immediately anterosinistral to acetabulum.

Ovary ovoid, occasionally irregularly indented, $0.19\text{--}0.30 \times 0.32\text{--}0.48$ mm, dextral to midline, about midlevel of hindbody. Seminal receptacle saccular, $0.09\text{--}0.14 \times 0.18\text{--}0.35$ mm, just posterior to ovary. Laurer's canal opening dorsally anterosinistral or posterosinistral to anterior testis. Vitellaria ramiform with irregularly shaped follicles, extending from pharyngeal level to near caudal extremity, overlapping caeca, ovary and testes ventrally. Uterus intercaecal, between acetabulum and anterior testis. Uterine eggs numerous, oval, $72\text{--}78 \times 46\text{--}55$ μm . Excretory pore terminal; excretory vesicle can be traced to near ovary.

Discussion. The present species is most similar to *Lepocreadium incisum* HANSON, 1955, taken from the intestine of *Melichthys buniva* of Hawaii, in having a oval body, a cirrus pouch not reaching posterior to the acetabulum, the vitellaria extending into the forebody, and the uterus with numerous eggs, but differs from it by having larger body and eggs, the pharynx smaller than the acetabulum, the testes without incisions, the cirrus pouch with a pars prostatica, and ramiform vitellaria. In *L. incisum*, the body is smaller (1.132 to 1.432 mm by 0.501 to 0.785 mm) as are the eggs (38 to 46 μm by 23 to 30 μm), the pharynx is nearly as large as the acetabulum, the testes have deeply incisions, the cirrus pouch is devoid of a pars prostatica, and the vitellaria consist of small, irregular-shaped follicles.

All others in the genus *Lepocreadium* occur in the intestine of marine fishes,

whereas only the present species in the gallbladder. The specific name refers to the Japanese name of the host.

References

- ANNÉREAUX, R. F., 1947. Three new trematodes from marine fishes of California. *Trans. Am. microsc. Soc.*, **66**: 249–255.
- BEVERLEY-BURTON, M., & G. EARLY, 1982. *Deretrema philippinensis* n. sp. (Digenea: Zoogonidae) from *Anomalops katoptron* (Beryciformes: Anomalopidae) from the Philippines. *Can. J. Zool.*, **60**: 2403–2408.
- CABALLERO y C., E., 1957. Helmintos de la Republica de Panama. XII. Descripción de dos trematodos de vertebrados marinos. *Rev. Med. Vet. Parasit. Maracay*, **16**: 11–24.
- HANSON, M. L., 1955. Some digenetic trematodes of plectognath fishes of Hawaii. *Proc. helminth. Soc. Wash.*, **22**: 75–87.
- MANTER, H. W., 1954. Some digenetic trematodes from fishes of New Zealand. *Trans. R. Soc. N.Z.*, **82**: 475–568.
- McFARLANE, S. H., 1936. A study of the endoparasitic trematodes from marine fishes of Departure Bay, B. C. *J. biol. Bd. Can.*, **2**: 335–347.
- YAMAGUTI, S., 1934. Studies on the helminth fauna of Japan. Part 2. Trematodes of fishes, I. *Jap. J. Zool.*, **5**: 249–541.
- 1942. Ditto. Part 39. Trematodes of fishes mainly from Naha. *Trans. biogeogr. Soc. Japan*, **3**: 329–398.
- 1959. Ditto. Part 54. Trematodes of fishes, XIII. *Publ. Seto Mar. Biol. Lab.*, **7**: 241–262.
- 1971. Synopsis of Digenetic Trematodes of Vertebrates. 1074 pp., 349 pls. Tokyo, Keigaku Publ.